

IN THE CLAIMS:

1 1. (Currently Amended) A synthetic polymer and starch blend comprising:
2 1-30 wt.% a granular and unplasticized starch having a moisture content of less
3 than about 1%;
4 1-24 wt.% a compatibilizer comprising a polymer and a grafting compound,
5 wherein said grafting compound is covalently bound to said polymer; and
6 the remainder a second polymer.

1 2. (Canceled)

1 3. (Original) The blend of Claim 1 wherein said starch is selected from the group
2 consisting of cornstarch, wheat starch, rice starch, and potato starch.

1 4. (Currently Amended) The blend of Claim 1 wherein said compatibilizer is comprised of
2 75-98 wt.% polymer and 2-25 wt.% grafting compound, ~~wherein said grafting compound is~~
3 ~~covalently attached to said polymer.~~

1 5. (Original) The blend of Claim 4 wherein said grafting compound is maleic
2 anhydride.

1 6. (Original) The blend of Claim 4 wherein the polymer of the compatibilizer is
2 selected from the group consisting of polyethylene, polypropylene, polystyrene, polybutylene,

3 poly(styrene-ethylene-butylene-styrene), poly(ethylene terephthalate), polyvinyl fluoride,
4 polyvinyl chloride, or derivatives thereof.

1 7. (Original) The blend of claim 4 wherein said grafting compound comprises 5 wt.%
2 of said compatibilizer.

1 8. (Currently Amended) The blend of claim 1 wherein said second polymer is selected from
2 the group consisting of polyethylene, polypropylene, polystyrene, polybutylene, poly(styrene-
3 ethylene-butylene-styrene), poly(ethylene terephthalate), polyvinyl fluoride, polyvinyl chloride,
4 or derivatives thereof.

1 9. (Currently Amended) The blend of Claim 1 wherein said second polymer is polyethylene.

1 10. (Currently Amended) A method for synthesizing a synthetic polymer and starch blend,
2 comprising:

3 mixing 1-30 wt.% granular and unplasticized starch having a moisture content of
4 less than about 1% with 1-24 wt.% compatibilizer comprising a polymer and a grafting
5 compound, wherein said grafting compound is covalently bound to said polymer, and the
6 remainder a second polymer; and

7 reacting the mixture such that the compatibilizer and the granular starch become
8 covalently bound.

1 11. (Original) The method of Claim 10 wherein said reacting comprises applying heat
2 and pressure.

1 12. (Original) The method of Claim 10 wherein said compatibilizer comprises 1-20 wt.%
2 grafting compound and 80-99 wt.% polymer.

1 13. (Original) The method of Claim 12 wherein said grafting compound is maleic
2 anhydride.

1 14. (Original) The method of Claim 12 wherein said grafting compound comprises 5
2 wt.% of said compatibilizer.

1 15. (Original) The method of Claim 12 wherein the polymer of the compatibilizer is
2 selected from the group consisting of polyethylene, polypropylene, polystyrene, polybutylene,
3 poly(styrene-ethylene-butylene-styrene), poly(ethylene terephthalate), polyvinyl fluoride,
4 polyvinyl chloride, or derivatives thereof.

1 16. (Currently Amended) The method of Claim 10 wherein said second polymer is selected
2 from the group consisting of polyethylene, polypropylene, polystyrene, polybutylene,
3 poly(styrene-ethylene-butylene-styrene), poly(ethylene terephthalate), polyvinyl fluoride,
4 polyvinyl chloride, or derivatives thereof.

17. (Currently Amended) A synthetic polyethylene and starch covalently bound mixture comprising:

5-30 wt.% of a granular and unplasticized starch selected from the group consisting of wheat starch, cornstarch, rice starch, potato starch or high amylose starch, wherein said starch is not gelatinized and has a moisture content of less than about 1%;

a first polymer selected from the group consisting of polyethylene, polypropylene, or polyethylene derivatives;

a compatibilizer comprising a polymer and a grafting compound, the grafting compound being selected from the group consisting of maleic anhydride or chemicals having similar reactive properties, and the polymer being covalently bound to the grafting compound;

wherein application of heat and pressure to the mixture produces covalent bonds between the compatibilizer and the starch;

wherein said compatibilizer is covalently bound to said first polymer;

wherein said starch granules are 10-100 micrometers in diameter;

wherein said compatibilizer is attached to approximately 5% of individual monomer units;

wherein the resulting mixture has similar mechanical properties to ~~is less expensive and more biodegradable than pure polyethylene and has similar mechanical properties;~~
and

wherein said mixture absorbs relatively little water.

18. (Currently Amended) The synthetic polymer and starch blend of Claim 1 wherein the second polymer is selected from the group consisting of polyethylene, polypropylene,

3 polystyrene, polybutylene, poly(styrene-ethylene-butylene-styrene), poly(ethylene terephthalate),
4 polyvinyl fluoride, polyvinyl chloride, or derivatives thereof and the compatibilizer is comprised
5 of maleic anhydride grafted poly(styrene-ethylene-butylene-styrene).

1 19. (New) The blend of Claim 1 wherein said grafting compound is selected from the group
2 consisting of epoxides.